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**APPENDIX B****CLAIMS PENDING IN USSN 09/685,189 WITH ENTRY OF THIS AMENDMENT**

31. An isolated or recombinant polypeptide encoded by the nucleic acid of acid claim 1, 2, 3, 8, or 18.

32. The isolated or recombinant polypeptide of claim 31, comprising a sequence selected from the group consisting of: SEQ ID NO:36 to SEQ ID NO:70 or SEQ ID NO:79 to SEQ ID NO:85.

33. The polypeptide of claim 31, having an antiproliferative activity of at least about  $8.3 \times 10^6$  units/milligram (mg) in a human Daudi cell line - based assay or an antiviral activity of at least about  $2.1 \times 10^7$  units/milligram in a human WISH cell/EMCV-based assay.

34. An isolated or recombinant polypeptide, comprising:

the amino acid sequence: CDLPQTHSLG- $X_{11}$ - $X_{12}$ -RA- $X_{15}$ - $X_{16}$ -LL- $X_{19}$ -QM- $X_{22}$ -R- $X_{24}$ -S- $X_{26}$ -FSCLKDR- $X_{34}$ -DFG- $X_{38}$ -P- $X_{40}$ -EEFD- $X_{45}$ - $X_{46}$ - $X_{47}$ -FQ- $X_{50}$ - $X_{51}$ -QAI- $X_{55}$ - $X_{56}$ - $X_{57}$ -HE- $X_{60}$ - $X_{61}$ -QQTFN- $X_{67}$ -FSTK- $X_{72}$ -SS- $X_{75}$ - $X_{76}$ -W- $X_{78}$ - $X_{79}$ - $X_{80}$ -LL- $X_{83}$ -K- $X_{85}$ -ST- $X_{88}$ -L- $X_{90}$ -QQLN- $X_{95}$ -LEACV- $X_{101}$ -Q- $X_{103}$ -V- $X_{105}$ - $X_{106}$ - $X_{107}$ - $X_{108}$ -TPLMN- $X_{114}$ -D- $X_{116}$ -ILAV- $X_{121}$ -KY- $X_{124}$ -QRITLYL- $X_{132}$ -E- $X_{134}$ -KYSPC- $X_{140}$ -WEVVRAEIMRSFSFSTNLQKRLRRKE, or a conservatively substituted variation thereof;

wherein  $X_{11}$  is N or D;  $X_{12}$  is R, S, or K;  $X_{15}$  is L or M;  $X_{16}$  is I, M, or V;  $X_{19}$  is A or G;  $X_{22}$  is G or R;  $X_{24}$  is I or T;  $X_{26}$  is P or H;  $X_{34}$  is H, Y or Q;  $X_{38}$  is F or L;  $X_{40}$  is Q or R;  $X_{45}$  is G or S;  $X_{46}$  is N or H;  $X_{47}$  is Q or R;  $X_{50}$  is K or R;  $X_{51}$  is A or T;  $X_{55}$  is S or F;  $X_{56}$  is V or A;  $X_{57}$  is L or F;  $X_{60}$  is M or I;  $X_{61}$  is I or M;  $X_{67}$  is L or F;  $X_{72}$  is D or N;  $X_{75}$  is A or V;  $X_{76}$  is A or T;  $X_{78}$  is E or D;  $X_{79}$  is Q or E;  $X_{80}$  is S, R, T, or N;  $X_{83}$  is E or D;  $X_{85}$  is F or L;  $X_{88}$  is E or G;  $X_{90}$  is Y, H, N;  $X_{95}$  is D, E, or N;  $X_{101}$  is I, M, or V;  $X_{103}$  is E or G;  $X_{105}$  is G or W;  $X_{106}$  is V or M;  $X_{107}$  is E, G, or K;  $X_{108}$  is E or G;  $X_{114}$  is V, E, or G;  $X_{116}$  is S or P;  $X_{121}$  is K or R;  $X_{124}$  is F or L;  $X_{132}$  is T, I, or M;  $X_{134}$  is K or R; and  $X_{140}$  is A or S.

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35. The polypeptide of claim 34, having antiproliferative activity of at least about  $8.3 \times 10^6$  units/milligram in a human Daudi cell line - based assay or antiviral activity of at least about  $2.1 \times 10^7$  units/milligram in a human WISH cell/EMCV-based assay.

36. The polypeptide of claim 34, comprising a sequence selected from the group consisting of: SEQ ID NO:36 to SEQ ID NO:46 and SEQ ID NO:48 to SEQ ID NO:54.

37. A polypeptide comprising at least 100 contiguous amino acids of a protein encoded by a coding polynucleotide sequence, the polynucleotide sequence selected from the group consisting of:

- (a) SEQ ID NO:1 to SEQ ID NO:35 or SEQ ID NO:72 to SEQ ID NO:78;
- (b) a coding polynucleotide sequence that encodes a first polypeptide selected from SEQ ID NO:36 to SEQ ID NO:70 or SEQ ID NO:79 to SEQ ID NO:85; and
- (c) a complementary polynucleotide sequence which hybridizes under highly stringent conditions over substantially an entire length of a polynucleotide sequence of (a) or (b).

38. The polypeptide of claim 37, said polypeptide having an antiproliferative activity in a human Daudi cell line-based cell proliferation assay or an antiviral activity in a human WISH cell/EMCV-based assay.

39. The polypeptide of claim 37, wherein the polypeptide specifically binds to a human alpha-interferon receptor.

40. The polypeptide of claim 37, comprising at least 150 contiguous amino acids of the encoded protein.

41. An isolated or recombinant polypeptide, comprising:  
an amino acid sequence comprising at least 50 contiguous amino acids of any one of SEQ ID NOS:36-70, the amino acid sequence comprising one or more of amino acids Ala19, (Tyr or Gln)34, Gly37, Phe38, Lys71, Ala76, Tyr90, Ile132, Arg134, Phe152, Lys160, and Glu166, wherein the numbering of the amino acids corresponds to that of SEQ ID NO:36.

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42. The polypeptide of claim 41, wherein the polypeptide binds a human alpha-interferon receptor.

43. The polypeptide of claim 41, said polypeptide exhibiting an antiproliferative activity in a human Daudi cell line-based cell proliferation assay or an antiviral activity in a human WISH cell/EMCV-based assay.

44. The polypeptide of claim 41, having an antiproliferative activity of at least about  $8.3 \times 10^6$  units/milligram in a human Daudi cell line - based assay or an antiviral activity of at least about  $2.1 \times 10^7$  units/milligram in a human WISH cell/EMCV-based assay.

45. The polypeptide of claim 41, wherein the polypeptide is 166 amino acids in length.

46. The polypeptide of claim 41, said polypeptide comprising amino acids Ala19, (Tyr or Gln)34, Gly37, Phe38, Lys71, Ala76, Tyr90, Ile132, Arg134, Phe152, Lys160, and Glu166, wherein the numbering of the amino acids of said polypeptide corresponds to the numbering of amino acids in SEQ ID NO:36.

47. The polypeptide of claim 41, comprising at least 100 contiguous amino acid residues of any one of SEQ ID NOS:36-70.

48. The polypeptide of claim 41, comprising at least 150 contiguous amino acid residues of any one of SEQ ID NOS:36-70.

49. The polypeptide of claim 41, comprising at least 155 contiguous amino acid residues of any one of SEQ ID NOS:36-70.

50. The polypeptide of claim 41, comprising an amino acid sequence selected from the group consisting of: SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:45, and SEQ ID NO:46.

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51. An isolated or recombinant polypeptide comprising an amino acid sequence comprising at least 155 contiguous amino acids of any one of SEQ ID NOS:36-70, the isolated or recombinant polypeptide comprising amino acids Lys160 and Glu166, wherein the numbering of the amino acids corresponds to that of SEQ ID NO:36.

52. The polypeptide of claim 51, comprising an amino acid sequence selected from the group consisting of: SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:45, and SEQ ID NO:46.

53. The polypeptide of claim 51, said polypeptide having an antiproliferative activity of at least about  $8.3 \times 10^6$  units/milligram in milligram in a human Daudi cell line - based assay or an antiviral activity of at least about  $2.1 \times 10^7$  units/milligram in a human WISH cell/EMCV-based assay.

54. The polypeptide of claim 34, 37, 41, or 51, further comprising a secretion/localization sequence.

55. The polypeptide of claim 34, 37, 41, or 51, further comprising a polypeptide purification subsequence.

56. The polypeptide of claim 55, wherein the sequence that facilitates purification is selected from the group consisting of: an epitope tag, a FLAG tag, a polyhistidine tag, and a GST fusion.

57. The polypeptide of claim 34, 37, 41, or 51, further comprising a Met at the N-terminus.

58. The polypeptide of claim 34, 37, 41, or 51, comprising a modified amino acid.

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59. The polypeptide of claim 58, wherein the modified amino acid is selected from the group consisting of: a glycosylated amino acid, a PEGylated amino acid, a farnesylated amino acid, an acetylated amino acid, and a biotinylated amino acid.

60. A composition comprising the polypeptide of claim 34, 37, 41, or 51 and an excipient.

61. The composition of claim 60, wherein the excipient is a pharmaceutically acceptable excipient.

62. A composition comprising the polypeptide of claim 58 in a pharmaceutically acceptable excipient.

63. A polypeptide which is specifically bound by a polyclonal antisera raised against at least one antigen, said at least one antigen comprising at least one amino acid sequence of SEQ ID NO:36 to SEQ ID NO:70 or SEQ ID NO:79 to SEQ ID NO:85, or a fragment thereof, wherein the antisera is subtracted with an IFN-alpha polypeptide encoded by a nucleic acid corresponding to one or more of GenBank accession number: J00210 (alpha-D), J00207 (Alpha-A), X02958 (Alpha-6), X02956 (Alpha-5), V00533 (alpha-H), V00542 (alpha-14), V00545 (IFN-1B), X03125 (alpha-8), X02957 (alpha-16), V00540 (alpha-21), X02955 (alpha-4b), V00532 (alpha-C), X02960 (alpha-7), X02961 (alpha-10 pseudogene), R0067 (Gx-1), I01614, I01787, I07821, M12350 (alpha-F), M38289, V00549 (alpha-2a), and I08313 (alpha-Con1).

105. A polypeptide which comprises a unique subsequence in a polypeptide selected from: SEQ ID NO:36 to SEQ ID NO:70 or SEQ ID NO:79 to SEQ ID NO:85, wherein the unique subsequence is unique as compared to a sequence of a known interferon-alpha polypeptide or a sequence of a polypeptide encoded by a nucleic acid corresponding to any of GenBank accession number: J00210 (alpha-D), J00207 (Alpha-A), X02958 (Alpha-6), X02956 (Alpha-5), V00533 (alpha-H), V00542 (alpha-14), V00545 (IFN-1B), X03125 (alpha-8), X02957 (alpha-16), V00540 (alpha-21), X02955 (alpha-4b), V00532 (alpha-C), X02960 (alpha-7), X02961 (alpha-10

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pseudogene), R0067 (Gx-1), I01614, I01787, I07821, M12350 (alpha-F), M38289, V00549 (alpha-2a), and I08313 (alpha-Con1).

120. The polypeptide of claim 34, 37, 41, or 51, said polypeptide having an increased growth inhibition activity against a population of cancer cells relative to the inhibition activity of human interferon-alpha 2a against the population of cancer cells.

121. The polypeptide of claim 120, wherein the population of cancer cells comprises a cancer cell line selected from: a leukemia cell line, a melanoma cell line, a lung cancer cell line, a colon cancer cell line, a CNS cancer cell line, an ovarian cancer cell line, a breast cancer cell line, a prostate cancer cell line, and a renal cancer cell line, the growth inhibition activity measured as the concentration of polypeptide or human interferon-alpha 2a causing a 50% inhibition of growth of the cell line (GI50 value), wherein the polypeptide has a GI50 value at least 2-fold lower than the GI50 value of the human interferon-alpha 2a.

124. The polypeptide of claim 31, further comprising a secretion/localization sequence.

125. The polypeptide of claim 31, further comprising a polypeptide purification subsequence.

126. The polypeptide of claim 125, wherein the sequence that facilitates purification is selected from the group consisting of: an epitope tag, a FLAG tag, a polyhistidine tag, and a GST fusion.

127. The polypeptide of claim 31, further comprising a Met at the N-terminus.

128. The polypeptide of claim 31, comprising a modified amino acid.

129. The polypeptide of claim 128, wherein the modified amino acid is selected from the group consisting of: a glycosylated amino acid, a PEGylated amino acid, a farnesylated amino acid, an acetylated amino acid, and a biotinylated amino acid.

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130. A composition comprising the polypeptide of claim 31, and an excipient.

131. The composition of claim 130, wherein the excipient is a pharmaceutically acceptable excipient.

132. A composition comprising the polypeptide of claim 128 in a pharmaceutically acceptable excipient.

147. The polypeptide of claim 31, said polypeptide having an increased growth inhibition activity against a population of cancer cells relative to the inhibition activity of human interferon-alpha 2a against the population of cancer cells.

148. The polypeptide of claim 147, wherein the population of cancer cells comprises a cancer cell line selected from: a leukemia cell line, a melanoma cell line, a lung cancer cell line, a colon cancer cell line, a CNS cancer cell line, an ovarian cancer cell line, a breast cancer cell line, a prostate cancer cell line, and a renal cancer cell line, the growth inhibition activity measured as the concentration of polypeptide or human interferon-alpha 2a causing a 50% inhibition of growth of the cell line (GI50 value), wherein the polypeptide has a GI50 value at least 2-fold lower than the GI50 value of the human interferon-alpha 2a.

149. An isolated or recombinant polypeptide comprising a sequence having at least 96% sequence identity over the entire length of a sequence selected from the group consisting of: SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:45, SEQ ID NO:52, SEQ ID NO:54, and a fragment thereof which exhibits an antiproliferative activity in a human Daudi cell line-based cell proliferation assay or an antiviral activity in a human WISH cell/EMCV-based assay.

150. The polypeptide of claim 149, comprising a sequence having at least 96% sequence identity over the entire length of SEQ ID NO:40 or a fragment thereof which exhibits an antiproliferative activity in a human Daudi cell line-based cell proliferation assay or an antiviral activity in a human WISH cell/EMCV-based assay.

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151. The polypeptide of claim 150, comprising a sequence selected from the group consisting of SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:46, and a fragment thereof which exhibits an antiproliferative activity in a human Daudi cell line-based cell proliferation assay or an antiviral activity in a human WISH cell/EMCV-based assay.

152. The polypeptide of claim 149, comprising a sequence having at least 96% sequence identity over the entire length of SEQ ID NO:41 or a fragment thereof which exhibits an antiproliferative activity in a human Daudi cell line-based cell proliferation assay or an antiviral activity in a human WISH cell/EMCV-based assay.

153. The polypeptide of claim 152, comprising a sequence selected from the group consisting of SEQ ID NO:41, SEQ ID NO:40, SEQ ID NO:46, SEQ ID NO:39, SEQ ID NO:45, SEQ ID NO:36, and a fragment thereof which exhibits an antiproliferative activity in a human Daudi cell line-based cell proliferation assay or an antiviral activity in a human WISH cell/EMCV-based assay.

154. The polypeptide of claim 149, comprising a sequence having at least 96% sequence identity over the entire length of SEQ ID NO:45 or a fragment thereof which exhibits an antiproliferative activity in a human Daudi cell line-based cell proliferation assay or an antiviral activity in a human WISH cell/EMCV-based assay.

155. The polypeptide of claim 154, comprising a sequence selected from the group consisting of SEQ ID NO:45, SEQ ID NO:36, SEQ ID NO:46, SEQ ID NO:41, SEQ ID NO:39, SEQ ID NO:42, and a fragment thereof which exhibits an antiproliferative activity in a human Daudi cell line-based cell proliferation assay or an antiviral activity in a human WISH cell/EMCV-based assay.

156. The polypeptide of claim 149, comprising a sequence having at least 97% sequence identity over the entire length of a sequence selected from the group consisting of: SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:45, SEQ ID NO:52, SEQ ID NO:54, and a fragment



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thereof which exhibits an antiproliferative activity in a human Daudi cell line-based cell proliferation assay or an antiviral activity in a human WISH cell/EMCV-based assay.

157. The polypeptide of claim 149, comprising a sequence having at least 98% sequence identity over the entire length of a sequence selected from the group consisting of: SEQ ID NO:40, SEQ ID NO:41, SEQ ID NO:42, SEQ ID NO:45, SEQ ID NO:52, SEQ ID NO:54, and a fragment thereof which exhibits an antiproliferative activity in a human Daudi cell line-based cell proliferation assay or an antiviral activity in a human WISH cell/EMCV-based assay.